

REMARKS

Applicants wish to thank Examiner Ronesi for the helpful and courteous discussion with Applicants' Representative on July 19, 2007.

The Examiner agreed to withdraw the finality of the current Office Action in view of MPEP 706.07(b).

The data of Table 1 of the specification as well as the data presented in the Rule 132 Declaration in this case were discussed in detail. It was pointed out that there are sufficient data showing the criticality of using alumina filler and preparing the coating liquid by using only alumina balls.

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

The present invention as set forth in **amended Claim 26** relates to a coating liquid for an outermost layer of an electrophotographic photoreceptor, comprising:

an alumina filler;

an organic compound having an acid value of from 10 to 700 mgKOH/g;

a binder resin; and

plural organic solvents;

wherein said organic compound is a polymer, copolymer or oligomer selected from the group consisting of i) saturated polyester, ii) unsaturated polyester, iii) unsaturated polyester having a carboxyl group on its end portion; iv) polymers, copolymers and oligomers of acrylic acid, methacrylic acid, acrylate and methacrylate; v) styrene-acrylic acid copolymers, vi) styrene-acrylic acid-acrylate copolymers, vii) styrene-methacrylic acid

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copolymers, viii) styrene-methacrylic acid-acrylate copolymers, ix) styrene-maleic acid copolymers, x) styrene-maleic anhydride copolymers and xi) mixtures thereof;

wherein said coating liquid is prepared by mixing the filler, the organic compound, the binder resin and the plural organic solvents using a ball mill containing only alumina balls.

Nakao et al, and Kanamori et al in view of Patzschke et al, alone or in combination, fail to disclose or suggest a coating liquid as claimed which is prepared by mixing **the alumina filler**, the organic compound, the binder resin and the plural organic solvents using a **ball mill containing only alumina balls**.

The specification of the present invention discloses at page 71, lines 5-10 that:

When alumina is used as a dispersing element, the abrasion amount of alumina is much less than zirconia, and therefore the influence on residual potential is very little. Therefore alumina is preferable as the dispersing element. In addition, it is preferable to use alumina as a filler when alumina balls are used as the dispersing element.

In addition, the Examples in the present specification show that **when only alumina balls are used**, the filler can be finely dispersed and excellent dispersion stability can be achieved. See the Examples starting at page 94 of the specification which were performed using different resins, monocarboxylic acid derivatives and fillers and wetting dispersants in various amounts. Notably, Examples 10, 25 and 26 are a direct comparison between using alumina balls and zirconia balls or a shaker instead of a ball mill. Example 10 had no precipitation after one day after the preparation, while in Examples 25 and 26 there is a small amount of precipitate after only one day. Clearly, using a ball mill that has only alumina balls results in superior dispersion stability and a coating having a uniform distribution of the filler can be obtained. However, if there is a precipitate in the coating liquid, the resulting coating cannot have a uniform distribution of the filler. Table 1 from pages 108-110 of the specification is reproduced below.

Table 1

		Filler	AV* ¹ (mgKOH /g)	Addi- tion amount * ² (parts)	PD* ³ of filler (μ m)	PD* ⁴ Of Liquid (μ m)	Pre- cipi- ta- tion
Example	1	Alumina	35	0.60	0.3	0.71	○
	2	Alumina	65	0.30	0.3	0.65	○
	3	Alumina	200	0.20	0.3	0.61	○
	4	Alumina	130	0.20	0.3	0.59	○
	5	Alumina	95	0.20	0.3	0.50	○
	6	Alumina	160	0.12	0.3	0.53	○
	7	Alumina	129	0.03	0.3	0.47	○
	8	Titanium oxide	129	0.03	0.3	0.51	○
	9	Alumina	150	0.06	0.3	0.48	○
	10	Alumina	180	0.06	0.3	0.42	○
	11	Alumina	365	0.03	0.3	0.39	○
	12	Alumina	180	0.01	0.3	0.57	○
	13	Alumina	180	0.20	0.3	0.40	○
	14	Alumina	180	0.06	0.2	0.37	○
	15	Alumina	180	0.06	0.9	1.06	○
	16	Alumina	180	0.06	0.013	0.21	○
	17	Titanium oxide	180	0.06	0.3	0.46	○
	18	Alumina treated with titanate coupling agent	180	0.06	0.3	0.36	○

19	Titanium oxide treated with aluminum stearate	180	0.06	0.03	0.27	◎	
20	Titanium oxide treated with silane coupling agent	180	0.06	0.015	0.31	○	
21	Alumina	180	0.06	0.3	0.62	○	
22	Alumina	180	0.06	0.3	0.45	◎	
23	Alumina	180	0.06	0.3	0.52	◎	
24	Alumina	180	0.06	0.3	0.70	○	
25	Alumina	180	0.06	0.3	0.51	○	
26	Alumina	180	0.06	0.3	0.48	○	
Comparative Example	1	Alumina	—	0	0.3	1.23	×
	2	Titanium oxide	—	0	0.3	1.15	×
	3	Alumina treated with titanate coupling agent	—	0	0.3	0.88	△
	4	Titanium oxide treated with silane coupling agent	—	0	0.015	0.51	×
	5	Alumina	—	0	0.3	1.16	×
	6	Alumina	7	0.60	0.3	1.08	×
	7	Alumina	7	1.20	0.3	0.96	×
	8	Alumina	7	0.60	0.013	0.58	×
	9	Alumina treated with titanate coupling agent	7	0.60	0.3	0.75	○
	10	Alumina	—	0.06	0.3	0.92	×

*1: Acid value of the organic compound

*2: Addition amount of the organic compound

*3: Average primary particle diameter of the filler

*4: Average particle diameter of the solid components in the coating liquid.

Further, Applicants previously submitted a **Rule 132 Declaration** showing that by using ball milling, the filler can be finely dispersed while the dispersion has good dispersion stability. This cannot be achieved with the methods of Nakao et al, and Kanamori et al in view of Patzschke et al. In addition, the use of alumina balls results in a superior product compared to a product obtained using zirconia balls or glass balls. It is shown that even when a ball mill is used, the dispersibility and dispersion stability of the resultant dispersions depends on the dispersion media (i.e. balls). This is not disclosed or suggested by Nakao et al, and Kanamori et al in view of Patzschke et al. Using the method according to Claim 26, superior dispersibility and dispersion stability can be obtained.

Further, the dispersion maintains good dispersibility for a long period of time. Therefore, the filler is uniformly dispersed in a protection layer (an outermost layer) formed using the dispersion. As a result, good mechanical durability can be imparted to the protective layer and a residual potential of the resultant photoreceptor can be decreased.

The Examiner stated that the data in the Rule 132 Declaration filed December 23, 2005, is insufficient to establish criticality for mixing with an alumina ball mill because the data is not commensurate in scope with the claims. The Examiner stated that there is no suggestion that all compositions would exhibit the improved properties. While Applicants disagree with the Examiner's position, they have limited the organic compound as supported at page 45, lines 15-23, of the specification. Thus, the previously filed Rule 132 Declaration is commensurate in scope with the claims.

Nakao et al, and Kanamori et al in view of Patzschke et al, alone or in combination, fail to disclose or suggest a coating liquid as claimed in amended Claim 26 which is prepared by mixing **the alumina filler**, the organic compound, the binder resin and the plural organic solvents using a ball mill containing only alumina balls.

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Claim 60 relates to a coating liquid for an outermost layer of an electrophotographic photoreceptor, comprising:

- an alumina filler;
- a polycarboxylic acid having an acid value of from 10 to 700 mgKOH/g;
- a binder resin; and
- plural organic solvents.

New Claim 61 relates to a coating liquid for an outermost layer of an electrophotographic photoreceptor, comprising:

- an alumina filler;
- an polycarboxylic acid having an acid value of from 10 to 700 mgKOH/g;
- a binder resin; and
- plural organic solvents;

wherein said coating liquid is prepared by mixing the filler, the organic compound, the binder resin and the plural organic solvents using a ball mill containing only alumina balls.

New Claims 62 and 63 further limit the compounds to those used specifically in the examples.

The Examiner has admitted in the Office Action of May 24, 2007, that the alumina ball mill improves the dispersion of the exemplified composition containing alumina filler and a polycarboxylic acid polymer. Thus, Claims 60-63 should be allowable.

Thus, the rejections over Nakao et al, and Kanamori et al in view of Patzschke et al, alone or in combination, should be withdrawn.

Regarding the **List of Related Cases filed September 27, 2006**, Applicants note that Serial No. 11/480,517 was listed as a related application for the Examiner's consideration as

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is required by §§2001.06 (b) and 2004. Thus, **consideration of the co-pending application on the record is requested.**

Finally, Applicants note that MPEP 821.04 states, "if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined." Applicants respectfully submit that should the elected group be found allowable, the non-elected claims should be rejoined.

With respect to the elected species, Applicants respectfully submit that, should the elected species be found allowable, the Office should expand its search to the non-elected species.

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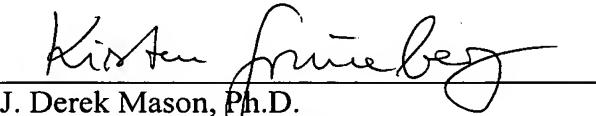
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This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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